BMX DDM 16025 Mixed Relay Input/Output module

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Subject of this Section

This section presents the BMX DDM 16025 module, its characteristics, and explains how it is connected to the sensors and pre-actuators.

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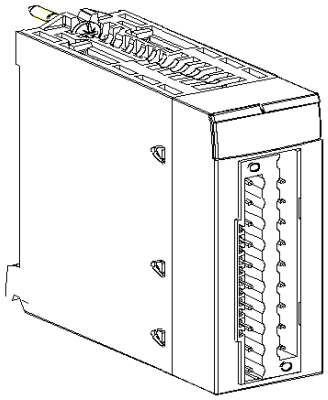
Introduction

Function

The BMX DDM 16025 module is a 24 VDC discrete module connected via a 20-pin terminal block. It is a positive logic module: its 8 input channels receive current from the sensors (sink). The 8 isolated relay outputs operate either on direct current (24 VDC) or alternating current (24...240 VAC).

Illustration



Characteristics

General Input Characteristics

The following table shows the general characteristics of the **BMX DDM 16025** and BMX DDM 16025H *(see page 28)* module inputs:

BMX DDM 16025 Module			Eight 24 VDC positive logic inputs
Nominal input values		Voltage	24 VDC
		Current	3.5 mA
Threshold input values	At 1	Voltage	≥ 11 V
		Current	≥ 2 mA for U ≥ 11 V
	At 0	Voltage	5 V
		Current	< 1.5 mA
	Sensor supply (including ripple)		19...30 V (possibly up to 34 V, limited to 1 hour/day)
Input impedance	At nominal U		6.8 kΩ
Response time	Typical		4 ms
	Maximum		7 ms
IEC 1131-2 compliance			Type 3
Reverse polarity			Protected
2-wire / 3-wire proximity sensor compatibility *(see Premium and Atrium using Unity Pro, Discrete I/O modules, User manual)*			IEC 947-5-2
Reliability	MTBF for continuous operation in hours at ambient temperature (30° C) (86° F)		835 303
Dielectric strength	Primary/secondary		1500 V actual, 50 / 60 Hz for 1 min.
	Between input/output groups		500 VDC
Resistance of insulation			>10 MΩ (below 500 VDC)
Type of input			Current sink
Paralleling of inputs			No
Sensor voltage: monitoring threshold	OK		> 18 V
	Error		< 14 V
Sensor voltage: monitoring response time at 24V (-15% ... +20%)	On appearance		8 ms < T < 30 ms
	On disappearance		1 ms < T < 3 ms
Power consumption 3.3 V	Typical		35 mA
	Maximum		50 mA

24 V pre-actuator consumption (excluding load current)	Typical	79 mA
	Maximum	111 mA
Power dissipation		3.1 W max.
Temperature derating *(see Premium and Atrium using Unity Pro, Discrete I/O modules, User manual)* for BMX DDM 16025		None

NOTE: For the **BMX DDM 16025H**, at 70° C (158° F) the maximum pre-actuator power supply must not exceed 26.4 V.

⚠ WARNING

LOSS OF INPUT FUNCTION

Do not operate the **BMX DDI 16025H** at 70° C (158° F) if the sensor power supply is greater than 29.0 V or less than 21.1 V. Overheating the module can cause the loss of the input function.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Input Fuses

Internal	None
External	1 fast blow fuse of 0.5 A for the input group

⚠ CAUTION

LOSS OF INPUT FUNCTION

Install the correct rating and type of fuse.

Failure to follow these instructions can result in injury or equipment damage.

General Output Characteristics

The following table shows the general characteristics of the **BMX DDM 16025** and BMX DDM 16025H *(see page 28)* module outputs:

BMX DDM 16025 Module		Eight 24 VDC/24-240 VAC relay outputs
Nominal values	Switching direct voltage	24 VDC resistive load
	Switching direct current	2 A resistive load
	Switching alternating voltage	220 VAC, Cos Φ= 1
	Switching alternating current	2 A, Cos Φ= 1

Minimum switching load	Voltage / Current	5 VDC / 1 mA.
Maximum switching load	Voltage	264 VAC / 125 VDC
On-line module change		Possibility
Response time	Activation	≤8 ms
	Deactivation	≤10 ms
Mechanical service life	Number of switching	20 million or more
Reliability	MTBF for continuous operation in hours at ambient temperature (30° C) (86° F)	835 303
Max. switching frequency	Cycles per hour	3 600
Electrical service life		Switching voltage / current
		200 VAC / 1.5 A, 240 VAC / 1 A, Cos Φ= 0.7 (1)
		200 VAC / 0.4 A, 240 VAC / 0.3 A, Cos Φ= 0.7 (2)
		200 VAC / 1 A, 240 VAC / 0.5 A, Cos Φ= 0.35 (1)
		200 VAC / 0.3 A, 240 VAC / 0.15 A, Cos Φ= 0.35 (2)
		200 VAC / 1.5 A, 240 VAC / 1 A, Cos Φ= 0.7 (1)
		200 VAC / 0.4 A, 240 VAC / 0.3 A, Cos Φ= 0.7 (2)
Noise immunity		In noise simulation, 1500 V actual, width 1s and 25 to 60 Hz
Power consumption 3.3 V	Typical	79 mA
	Maximum	111 mA
24 V pre-actuator consumption	Typical	36 mA
	Maximum	58 mA
Power dissipation		3.1 W max.
Dielectric strength	Max. voltage	2830 VAC rms / cycles
Resistance of insulation		10 MΩ
Temperature derating *(see Premium and Atrium using Unity Pro, Discrete I/O modules, User manual)* for BMX DDM 16025		None

(1) 1 x 10^5 cycles
(2) 3 x 10^5 cycles

NOTE: For the **BMX DDM 16025H**, at 70° C (158° F) the maximum pre-actuator power supply must not exceed 24 VA.

⚠ WARNING

LOSS OF OUTPUT FUNCTION

Do not operate the **BMX DDI 16025H** at 70° C (158° F) if the pre-actuator power supply is greater than 28.8 V or less than 19.2 V. Overheating the module can cause the loss of the input function.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Output Fuses

Internal	None
External	1 fast blow fuse of 12 A for the output group

⚠ CAUTION

LOSS OF INPUT FUNCTION

Install the correct rating and type of fuse.

Failure to follow these instructions can result in injury or equipment damage.

⚠ DANGER

HAZARD OF ELECTRICAL SHOCK, EXPLOSION OR ARC FLASH

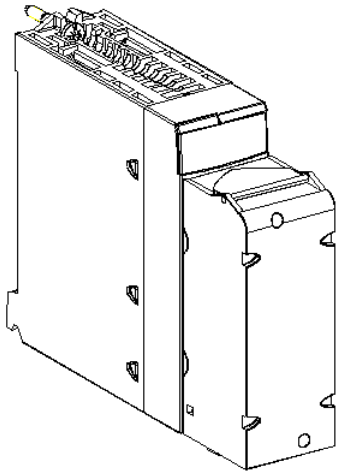
Switch off the sensor and pre-actuator voltages before connecting or disconnecting the module.

Failure to follow these instructions will result in death or serious injury.

Connecting the Module

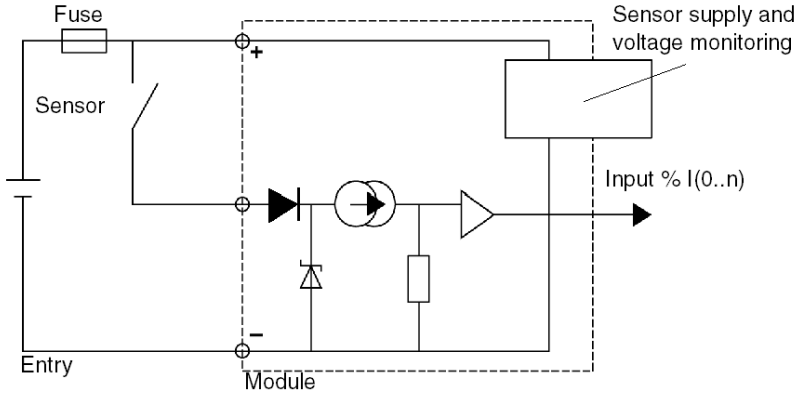
At a Glance

The BMX DDM 16025 module is fitted with a removable 20-pin terminal block for the connection of eight input channels and eight isolated relay output channels.



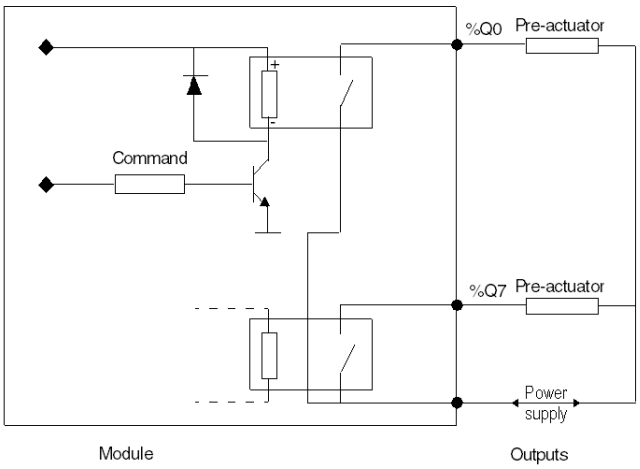
Input Circuit Diagram

The following diagram shows the circuit of a direct current input (positive logic).



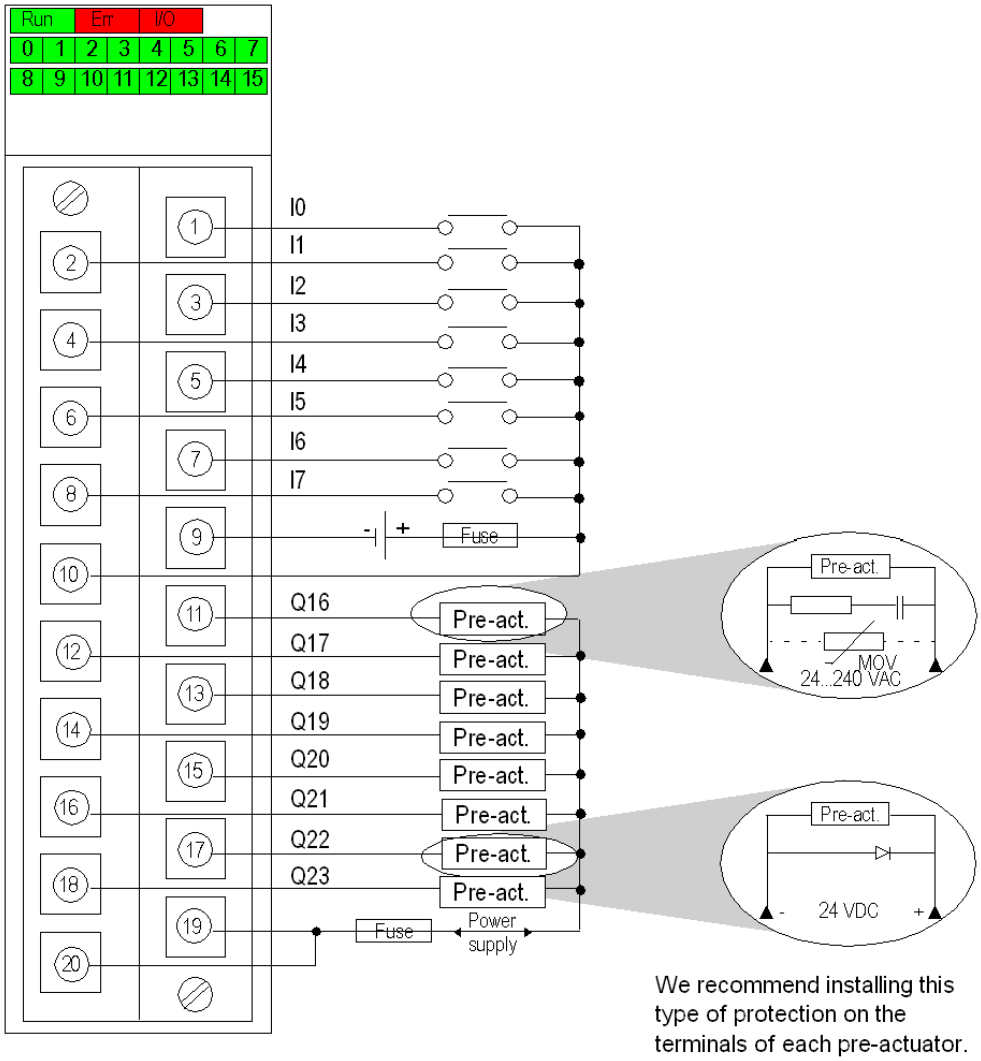
Output Circuit Diagram

The following diagram shows the circuit of relay outputs.



Module Connection

The diagram below shows the connection of the module to the sensors and pre-actuators.



We recommend installing this type of protection on the terminals of each pre-actuator.

input power supply: 24 VDC
output power supply: 24 VDC or 24...240 VAC
input fuse: 1 fast blow fuse of 0.5 A
output fuse: 1 fast blow fuse of 12 A
pre-act: pre-actuator